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MR. BOB JEFFERSON: My name is Bob Jefferson. I am an independent consultant, have been for the past 15 years. For 28 years preceding that I worked for Sandia National Laboratories in Albuquerque, New Mexico. FROM THE FLOOR: Can you speak into the Mike?

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MR. JEFFERSON: I have been involved in the research and development on the safety of shipment of radioactive materials, including spent fuel for the past 26 years. During that period of time, the organization I was involved with conducted thousands of experiments, both subscale and full scale. And as a result of those experiments, we concluded that the current regulations and the current equipment being used is adequate to provide safety to the public, and it doesn't make any difference whether that is one shipment or 20,000 shipments.

There are lots of people in the world who are in the gambling business, who would love for you to think that the probability goes down as the number of tries goes up, or the probability of winning goes up as the number of tries goes up, and that simply isn't true.

One of the things we did in our studies, was look at what would happen if you had an accident in an urban area. And we picked New York City because it has the highest urban density during the day of any city in the country. The report when it came out said, essentially, there are no conditions within the city that would allow you to create an accident sufficient to breach these containers. And, therefore, there would be zero affect of transporting through cities. That was objected to by some who said, you haven't looked at terrorism.

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So we proceeded to embark upon a study of terrorism. We used eight different methodologies in attempts to breach these casks. I am not going to tell you what those were. I am not going to provide you with a cookbook. But I will tell you one that didn't work. This was long before the Alfred P. Murrah Building in Oklahoma City, and we used 5,000 instead of 4,000 pounds of ammonium nitrate fuel oil, 10 feet away from a simulated cask. We bent it like a banana and hurled it a hundred feet, but if it had been a real cask, it would not have released any material. That was an unsuccessful method.

We found, indeed, there are ways to open these casks using explosives. We consulted terrorism experts and we were told that terrorists need basically four things. They need the expertise, and there are those people with the expertise. They need the tools, and there are those people who have the tools. They need access to the cask, and we strive hard to prevent that access.

For one thing, each one of these shipments has a transmitter on it and we know within a hundred feet where it is at all times, and if it's diverted we know it immediately. And, fourthly, they need time. The less time you can give them, the lower the probability of a successful attack, and, again, part of our system is to reduce that available time. So, given that, even so, we did find that there are ways to breach the cask.

What we did find is of interest to the terrorists as much as is to you. We selected one method and we conducted an experiment on a shipping cask that had seen service and was retired from service, and we put this thing in a giant bottle and then we attacked it explosively, and we poked a hole in the cask, and we collected all of the material that came out of the cask, and we weighed

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it and we weighed all the material that was still in the cask, so we knew exactly how much material came out.

We, furthermore, screened the material so we knew what the respirable sizes were, or what the particle sizes were and we could, therefore, infer how much of that cask came out respirable material. All of this done in a bottle.

Now, prior to doing this, we had estimated that an attack of this sort would release one percent of the contents of the cask. And our finding was that it released one ten-thousandth of that amount, .0001 percent.

Now, if you look at that kind of an attack and you conduct it in Manhattan at rush hour on an intersection, the explosion would kill about 400 to 500 people. The release of radioactive materials from the cask, would result in two-tenths of one latent cancer. So the problem is not the release of material. The problem is the explosives and the terrorists know that and so this becomes an unattractive target.

DR. LAWSON (Facilitator): 30 seconds, please.

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MR. JEFFERSON: Okay.                      The fact of the matter is, that we have looked at these shipments from every conceivable aspect and they do not, in fact, present a hazard to the public, whether they are moved across country or through cities or whatever.